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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/768,686	01/24/2001	William B. Busa	00,368-A	3892
20306	7590	12/19/2003	EXAMINER	
MCDONNELL BOEHNEN HULBERT & BERGHOFF			ZHOU, SHUBO	
300 SOUTH WACKER DRIVE				
SUITE 3200			ART UNIT	
CHICAGO, IL 60606			PAPER NUMBER	
			1631	

DATE MAILED: 12/19/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	09/768,686	BUSA, WILLIAM B.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Shubo "Joe" Zhou	1631	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 22 September 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) 1-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 21,22 and 24-27 is/are rejected.
- 7) ☒ Claim(s) 23 and 26 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 January 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All   b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)                      4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_ .
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)                      5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_ .                      6) ☐ Other: \_\_\_\_\_ .

## **DETAILED ACTION**

Applicants' election of Group IV (claims 21-27), drawn to a method of creating automated biological inferences in the response filed 9/22/03, is acknowledged. Because applicants did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Accordingly, claims 1-27 are currently pending, but only claims 21-27 are under consideration, and claims 1-20 are withdrawn from further consideration as being drawn to non-elected inventions.

### ***Specification***

The specification is objected to because of the following:

The disclosure is objected to because it contains an embedded hyperlink and/or other form or browser-executable code. Such code is present in the specification at page 6, and/or elsewhere. Applicant is required to delete the embedded hyperlink and/or other form of browser-executable code. See MPEP ' 608.01.

There is a blank on page 7 for an application number.

Appropriate correction is required.

### ***Information Disclosure Statements***

The Information Disclosure Statements filed on 8/23/01, 9/20/01, 12/6/01, and 4/17/02 have been entered and considered except the non-patent references (C1-C68) filed 8/23/01, which have not been considered due to the unavailability of the references caused by an error of the Office. However, these references will be considered if applicants provide copies of the references in response to this Office action without filing a separate IDS. Initialed copies of the forms PTO-1449 are enclosed with this action. Please note that the PTO-1449 form filed 9/20/01 has references lined through. These references have not been considered because they are not in English and no translations are provided.

### ***Specification***

The specification is objected to because of the following:

The disclosure is objected to also because it contains an embedded hyperlink and/or other form or browser-executable code. Such code is present in the specification at page 11 and elsewhere of the specification. Applicants are required to delete all the embedded hyperlinks and/or other form of browser-executable codes. See MPEP ' 608.01.

Appropriate correction is required.

### ***Claim Rejections-35 USC § 102(b)***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

**Claims 21-22, 24-27 are rejected under 35 U.S.C. 102(b) as being anticipated by Blaschke et al. (IDS document: ISMB'99, pages 60-67).**

The claims are drawn to methods of creating automated biological inferences of biological/chemical names/processes from databases comprising construction of a connection network, statistical analysis for the likelihood of inferences of relationship and automatic generation of a relationship of the names or processes.

Blaschke et al. disclose a method of creating automated biological inferences. The method comprises extracting biological names and processes, such as P21, E2F and cell cycle control from databases such Medline. See pages 62, 63, and 65.

In regard to claim 21, Blaschke et al. disclose a system for automatic detection of protein-protein interactions etc. from scientific databases as shown in Figure 1 (page 61). This system is considered as being the same as the connection network of the instant claims. Further, items 1, 2, 4, and the "protein/protein interaction sentences" in the system of Figure 1 are considered as being the same as the "nodes" required in the instant claims because they items in the system represent biological or chemical names, and the connections between the items such as "5" are considered as being the same as the "arc" of the instant claims, which is consistent with the definitions for the term "nodes" and "arcs" in the specification (page 22, lines 11-17, and page 27, lines 8-10). Further, the protein names, e.g. "Toll", "Tube" and "Dorsal", in Figure 2 are also considered as "nodes" and the connections between them are considered as "arcs" because the names and are connected after they are found to co-occur in a sentence or passage. Blaschke et

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al. also apply “simple statistical algorithms” in the system to determine the co-occurrence of the protein names and action names. See the “rules” on page 62 and page 66, right column lines 4-7. The system generates a graph showing the inferred interaction of proteins such as that shown in Figure 2 and that in Figure 4.

In regard to claim 22, while Blaschke et al. do not explicitly recite the term “computer readable medium”, it is readily recognized by one of ordinary skill in the art that since the system is for “automatic extraction of biological information from scientific text” (see the title) and the system uses “statistical algorithms” (page 66, right column lines 4-7), the algorithms and the system process must be on a computer readable medium. It should be noted that absent a clear definition for the term “computer readable medium” in the specification, it is broadly interpreted as being disks, CD-rom, or even a sheet of paper containing the algorithms because it can be scanned and thus read by a computer.

In regard to claim 24, at least some of the biological molecules and process co-occur in a cell. For example, the system detects the interaction between pelle/tube and dorsal, wherein the former bind(s) to the latter to form a complex of four components. See page 63, left column. It is readily recognized by one of ordinary skill in the art that such complex is formed within a cell.

In regard to claim 25, it is readily recognized by one of ordinary skill in the art that the interactions of proteins as shown in Figures 2 and 4 represent multiple biological pathways such as the pathway of cactus phosphorylation and the release and degradation of cactus.

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In regard to claims 26 and 27, as shown in Figure 1, and disclosed on page 63, left column, the system automatically detects co-occurrences of activation, binding, and phosphorylation (all processes) between proteins. For example, “dorsal – binds – tube” co-occur 5 times and it is inferred by the system that dorsal interacts with tube based on the simple statistical algorithm. Another example is that “pelle – activate – dorsal” co-occur 10 times, and it is inferred by the system that pelle is logically associated with the process of the activation of dorsal.

### **Claim Objections**

Claim 23 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim 26 is objected because it appears a typographical error exists in line 3 wherein “with a plurality of biological process” should be ““with a plurality of biological processes”.

### ***Conclusion***

No claim is allowed.

Papers related to this application may be submitted to Technical Center 1600 by facsimile transmission. Papers should be faxed to Technical Center 1600 via the PTO Fax Center located in Crystal Mall 1. The faxing of such papers must conform with the notices published in the Official Gazette, 1096 OG 30 (November 15, 1988), 1156 OG 61 (November 16, 1993), and 1157 OG 94 (December 28, 1993)(See 37 CFR § 1.6(d)). The CM1 Fax Center number is either (703) 308-4242 or (703)305-3014.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to:

Shubo "Joe" Zhou, Ph.D., whose telephone number is (703) 605-1158. The examiner can normally be reached on Monday-Friday from 8 A.M. to 4 P.M.

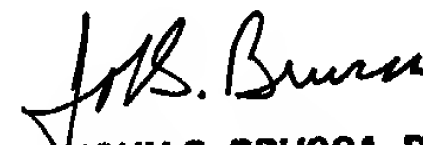
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Woodward, Ph.D., can be reached on (703) 308-4028.

Any inquiry of a general nature or relating to the status of this application should be directed to Patent Analyst Tina Plunkett whose telephone number is 703)-305-3524, or to the Technical Center receptionist whose telephone number is (703) 308-0196.

S. "Joe" Zhou, Ph.D.



Patent Examiner



JOHN S. BRUSCA, PH.D.  
PRIMARY EXAMINER